

Chapter E 145
COMMUNICATION SYSTEMS; RULES
FOR EMPLOYEES

E 145.01 General precautions
E 145.02 Overhead lines

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E 145.01 General precautions. (1) **HEEDING WARNINGS. WARNING OTHERS.** Employees should cultivate the habit of being cautious, heed warning signs and signals, and always warn others when seen in danger near equipment and lines.

(2) **INEXPERIENCED EMPLOYEES.** No employee shall do work for which he is not properly qualified on or about equipment or lines, except under the direct supervision of an experienced and properly qualified person.

(3) **ELECTRICAL SUPPLY EQUIPMENT OR WIRES.** Workmen whose duties do not require them to approach or handle electrical supply equipment and wires should keep away from such equipment or wires. Electrical supply equipment and wires should always be considered as alive unless positively known to be dead.

(4) **SAFE SUPPORTS AND SAFETY BELTS.** (a) *Safe supports.* Employees should not support themselves on any portion of a tree, pole structure, lamp bracket, or similar fixtures on poles, scaffold, ladder, roof, skylight, or other elevated structure without first making sure that the supports are strong enough, reinforcing them if necessary. Portable ladders should be in a safe position before being climbed. The slipping of a ladder at either end should be carefully guarded against, especially where the supporting surfaces are smooth or vibrating. Insecure makeshift substitutes for ladders should not be used. An employee should never trust his weight on thin wooden boxes, sinks, washbowls, window shelves, or chair backs. A ladder should not be placed upon a box, barrel, or other movable or insecure object. Care should be taken to see that chairs, rolling ladders, and similar equipment are in first-class condition before being used.

(b) *Safety belts.* Employees should not work in elevated positions unless secured from falling by a suitable safety belt or other adequate means (sometimes including suitably located pole steps). Before an employee trusts his weight to the belt, he should determine that the snaps or fastenings are properly engaged and that he is secured in his belt.

(c) *Safety ropes.* Ropes used for supporting boatswains' chairs, platforms, or for other purposes on which the security of the employee depends shall be frequently inspected to assure that they are maintained in good condition.

(5) **DUTIES OF FOREMAN.** (a) *Duties.* Each foreman in charge of work shall see that the safety rules are observed by the employees

under his direction. He shall make all necessary records; reporting to his superior when required. He shall permit only authorized persons to approach places where work is being done. He shall adopt such precautions as are within his power to prevent accidents, and prohibit the use of tools or devices which are defective, or not suited to the work in hand.

(b) *Qualified guides.* The qualified person accompanying un instructed workmen or visitors near electrical equipment or lines shall take precautions to provide suitable safeguards and see that the safety rules are observed.

(6) **HANDLING LIVE PARTS.** No employee should touch, with bare hands, any exposed ungrounded live part of more than 150 volts to ground, unless he is insulated from other conducting surfaces, including the ground itself. When employees must touch, at the same time, two parts between which a considerable potential exists, insulating gloves or other protection shall be used.

(7) **POWER CIRCUITS IN CENTRAL OFFICES.** (a) When making repairs on electric light or power circuits, the circuits shall, whenever possible, be made dead.

(b) Where practicable, moving apparatus, as, for example, a fan, shall be stopped before working upon it.

(c) None other than duly authorized persons shall be admitted to central-office transformer vaults or battery rooms.

(d) Care shall be used while working on or near circuits of more than 150 volts to ground, particularly in alternating-current districts.

(8) **HANDLING FUSES OR BRUSHES.** (a) When working on the brushes of a machine in operation, employees shall use care not to break a circuit, the flashing of which may injure the eyes or burn the hands. If it is necessary to remove a brush from the holder, the machine shall be shut down.

(b) When inspecting or changing fuses, care should be taken to prevent injury to the eyes. If it is necessary to handle the fuses, the circuits should be cut off, if possible.

(9) **BATTERY ROOMS.** (a) Smoking, or the use of open flames, or of tools which may generate sparks, should be avoided except when cells are not actively gassing and when prior ventilation has been ample. Sparks from frictional or static electricity should be avoided as they may ignite the gas if discharged close to its source, as at the vent of a sealed-type cell during overcharging. The electrolyte of storage batteries, and spray containing electrolyte, are somewhat corrosive, particularly when concentrated by evaporation, and contact with body or clothes should be avoided.

(b) Do not handle live parts of batteries or their connections unless adequate precautions are taken to avoid shock.

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E 145.02 Overhead lines. (1) **PRECAUTIONS TO BE OBSERVED BEFORE CLIMBING STRUCTURES.** (a) Before climbing poles, ladders, scaffolds, or other elevated structures first assure yourself that the pole, ladder, scaffold, tree, crossarm, messenger wire, cable car, or boatswain's chair, or other elevated support is strong enough to safely sustain your weight.

(b) On pole-replacement work no pole shall be climbed for the purpose of clearing it of all wire and cables without first guying or bracing the pole securely.

(c) If poles or crossarms are apparently unsafe because of decay, or unequal pulls of wire on them, they should be properly braced or guyed, if necessary, before they are climbed.

(d) An uncoiled hand line, rope, or wire of any sort should not be fastened to the employee while climbing a pole, but where this must be done the employee should exercise due care to prevent the line from catching on obstructions.

(e) In climbing poles careful watch should be kept for nails or other foreign attachments which might catch in the clothing and cause a fall.

(2) USE OF POLE STEPS. (a) When poles are stepped make use of such steps in climbing, first making sure that the steps are firmly set in solid material before trusting your weight upon them. Pay particular attention, on icy poles, to each step.

(b) Do not support yourself by pins, brackets, or conductors.

(3) SPURS. Spurs with gaffs worn short shall not be used. The gaffs on spurs shall be kept sharp and spurs shall fit properly. Spurs shall not be worn on work for which they are not required, nor while men are traveling to or from work.

(4) APPROACHING SUPPLY LINES. (a) Avoid contact with all wires other than those you know to be communication wires, assuming such other wires always to be alive. Communication wires in trouble may be in contact with supply lines at some distant point, and should be treated as live supply lines unless known to be free from any dangerous voltage.

(b) Do not approach any supply wire or supply equipment within the distances given in section E 142.03 under chapter E 142, unless you comply with all the rules under that section.

(5) TOUCHING EQUIPMENT. While handling communication wires, metal sheaths, or communication equipment avoid touching trolley or arc-lamp span wires and supply lines or equipment. Especially avoid standing on or touching transformer cases, hangers, or connections.

(6) CARE ABOUT ELECTRICAL SUPPLY LINES. (a) Do not go among any wires until you know their voltage.

(b) Leaning over and crowding through unprotected supply wires should be avoided wherever possible.

(c) Place yourself so that you will not be liable to fall on supply wires should an accident occur.

(d) Do not depend on the insulating covering of wires, and treat all wires as alive unless they have been killed properly (except communication wires known to be clear).

(e) Treat also as alive all wires (unless thoroughly grounded) which are being strung near supply wires; regard them as being of the same voltage as the supply wires.

(f) Avoid use of hand lines or measuring tapes containing metal strands.

(g) When necessary to work in the vicinity of supply wires, transformers, and similar equipment assure yourself before starting work

that the position of the body is such that should you momentarily forget yourself or fall, no portion of the body will come in contact with the foreign wires or equipment. Have the supply circuits killed where possible before approaching them.

(h) Railway span wires, pull-offs, and trolley brackets shall be treated as if alive, even though equipped with strain or other insulators.

(7) STRINGING WIRES. (a) Never string wires near live circuits except by means of suitable insulating hand lines or other appliances.

(b) Avoid the use of single or paired wires as a substitute for a hand line.

(c) Wires should not be strung above live circuits operating at more than 750 volts, unless the wires being strung are effectively grounded or otherwise suitably protected, or in handling them all the precautions are observed as provided in section E 142.03, for work on parts at the voltage of the circuits concerned, and the spacings maintained.

(d) Never change the strains on a pole by adding or removing wires until assured that the pole will stand the altered strains.

(e) When wires are being pulled up on corner poles employees should stand in such a position that they cannot be struck by the wire in case it slips.

(f) Where it is necessary to remove communication wires below which are supply wires, power should be shut off of the supply wires where possible, and, if this is not practicable, rope cradles and suitable guards should be erected. Extraordinary care should be exercised to prevent the communication wires from sagging into the supply wires.

(g) In stringing wires, cables, messengers, span wires, or guys do not allow them to sag so as to endanger vehicles or pedestrians below, unless traffic is intercepted by watchmen or otherwise. This may necessitate keeping a watchman at the coil or reel. When stringing wires for long distances, precautions shall be taken to prevent the possibility of vehicles or pedestrians coming into contact with the wires at the intersecting streets or highway crossings.

(8) PROTECTING TRAFFIC. (a) When working overhead, keep tools and materials not in use in proper receptacles; tools or materials should not be thrown to or from the man on the pole, but should be raised or lowered by means of a hand-line, using a proper receptacle, if practicable. Also tools and loose materials should not be left at the top of poles, ladders, or other elevated structures.

(b) Workmen shall not stand where they are liable to be struck by materials dropped by men working overhead.

(c) Pole holes, open manholes, excavations, and obstructions along the public highway and other frequented places shall be protected by watchmen, barriers or suitable guards, warning signs, or danger signals so located as to be conspicuous to traffic.

(d) When working overhead or hoisting or lowering materials above places where traffic occurs, a man should be stationed to warn passersby.

(e) Where traffic is light, warning signs may be used in lieu of watchmen. Where traffic is congested, it may be necessary to rope off the space.

(9) **REPORTING DANGEROUS CONDITIONS.** An employee should report as soon as practicable to his superior or some suitable authority any obvious hazards to life or property observed in connection with any electric equipment or lines. Any imminently dangerous conditions shall be guarded until they can be made safe.

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E 145.03 Underground lines. (1) **GUARDING MANHOLES, HANDHOLES, AND STREET OPENINGS.** When removing manhole or handhole covers or making excavations, promptly protect the opening with a barrier, temporary cover, or other suitable guard, and see that danger signals or red lights are displayed in a location conspicuous to the traffic until permanent covers are in place or the excavations are filled.

(a) **Exception:** Red lights are not required on private right of way or at other locations not accessible to vehicular or pedestrian traffic.

(2) **TESTING FOR GAS.** (a) Do not enter manholes until you have assured yourself that the manholes are free from dangerous gases, as indicated by approved testing devices, by ventilation, or by other adequate methods.

(b) When work is being carried on for any length of time in manholes where gas collects, suitable ventilation shall be provided, or tests with the safety device should be repeated at regular intervals to make certain that gas is not accumulating in the manhole in dangerous quantities.

(3) **WATCHMAN ON SURFACE AT MANHOLE.** Where any hazard to the workmen is involved observe the following:

(a) Do not enter a manhole unless a man is stationed at the surface.

(b) Do not leave a manhole unwatched until all workmen are out.

(4) **AVOIDING FLAMES.** (a) Do not smoke in manholes, and avoid as far as practicable open flames or torches in or near manholes.

(b) If it is necessary to illuminate a manhole, electric lights only should be used. When doing this, it should be known that the leads, sockets, and connections are well insulated and in good condition in order to avoid the possibility of a spark. Special attention should be paid to the sparking of any motors used for ventilating purposes.

(c) Avoid sparks in handling live parts or cable sheaths, and avoid igniting the flux in soldering and wiping joints. In using hot paraffin see that it does not reach a temperature at which it will ignite.

(d) In central-office cable vaults, tests shall be made for the presence of gas before using exposed flames, and such flames shall not be used in vaults where gas collects.

(5) **PULLING CABLES.** When pulling cables, make sure that the gear cannot slip so as to injure workmen. Avoid the danger of having the hands drawn into the tackle by the pulling line.

(6) **REPORTING DANGEROUS CONDITIONS.** Promptly report to your immediate superior any dangerous condition of your own or other utilities, whether observed in underground or overhead construction. Particularly report unsanitary conditions, gas, or missing cable tags in manholes and abnormally sagging wires or broken supports in overhead construction.

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